JAVA PROGRAMS

Display odd numbers between 1 -100

```java
class OddNumber {
       public static void main(String args[]) {
               System.out.println("The Odd Numbers are:");
               for (int i = 1; i <= 100; i++) {
                       if (i % 2 != 0) {
                               System.out.print(i + " ");
                       }
               }
       }
}
```

Sum of odd numbers between 1 -100

```java
  class SumOfNum
  {
       public static void main(String args[])
       {
               int sum = 0;
               for (int i = 1; i <= 100; i++)
               {
                       if (i % 2 != 0)
                       {
                               sum = sum + i;
                       }
               }
               System.out.println("The Sum Of 100 Odd Numbers are:" + sum);
       }
  }
```

Total number of odd numbers between 1 -100

```java
  class TotalNumOfOddNum
  {
       public static void main(String args[])
       {
               int count = 0;
               for(int i = 1;i <= 100;i++)
               {
                       if(i % 2 != 0)
                       {
                               count++;
                       }
               }
               System.out.println("The Count Of Odd Numbers are:" + count);
       }
  }
```

Find sum of first n numbers

```java
class SumOfNum
{
    public static void main(String args[])
    {
        int sum = 0;
        int n=10;
        for(int i = 1;i <= n;i++)
        {
            sum = sum + i;
        }
        System.out.println("The Sum Of "+n+" Numbers are:" + sum);
    }
}
```

Find the sum of the digits of a number

```java
public class DigitsSum
{

    public static void main(String[] args)
    {
        int num=251025, rem = 0, sum = 0, temp;
        temp = num;

        while (num > 0)
        {
            rem = num % 10;
            sum = sum + rem;
            num = num / 10;
        }

        System.out.print("Sum of Digits of " + temp + " is " + sum);
    }

}
```

Calculate electricity bill

```java
public class ElectricBill
{
    public static void main(String args[])
    {
        int units = 123;
        int bill = 0;

        if (units > 100)
        {
            if (units >= 200)
            {
                if (units > 300)
                {
                    bill = units * 8;
                }
                else
```

```
                                      bill = units * 6;
                        }
                        else
                                bill = units * 5;
                }

                System.out.println("CHENNAI ELECTRICITY LTD, CHENNAI");
                System.out.println("Units Consumed : " + units);
                System.out.println("Total Bill : " + bill);
        }
    }
```

Java program to find Armstrong number

```java
    public class ArmstrongNumber
    {
        public static void main(String args[])
        {
                int n, arg, sum = 0, r;

                n = 153; // input value
                arg = n;
                for (int i = 1; i < n; i++)
                {
                        while (n > 0)
                        {
                                r = n % 10;
                                sum = sum + (r * r * r);
                                n = n / 10;

                        }

                }
                if (arg == sum)
                {
                        System.out.println("Given number is armstrong number: " + arg);
                }
                else
                {
                        System.out.println("Given number is not armstrong number: " + arg);
                }
        }

    }
```

Program to print Armstrong number between 1 to 1000

```java
public class ArmstrongNumbers
{

        public static void main(String[] args)
        {
                int num,rem,limit=1000, sum = 0;
                System.out.print("Armstrong numbers from 1 to N:");
                for (int i = 1; i <= limit; i++)
```

```java
                {
                        num = i;
                        while (num > 0)
                        {
                                rem = num % 10;
                                sum = sum + (rem*rem*rem);
                                num = num / 10;
                        }

                        if (sum == i)
                        {
                                System.out.print(i + " ");
                        }
                        sum = 0;
                }

        }

}
```

Print given number in words

```java
  public class NumberToWords
  {

        public void pw(int n, String ch)
        {
   String one[] = { " ", " One", " Two", " Three", " Four", " Five", " Six", " Seven", " Eight", "
Nine", " Ten"," Eleven", " Twelve", " Thirteen", " Fourteen", "Fifteen", " Sixteen", " Seventeen",
" Eighteen"," Nineteen" };

   String ten[] = { " ", " ", " Twenty", " Thirty", " Forty", " Fifty", " Sixty", "Seventy", " Eighty",
" Ninety" };

                if (n > 19)
                {
                        System.out.print(ten[n / 10] + " " + one[n % 10]);
                }
                else
                {
                        System.out.print(one[n]);
                }
                if (n > 0)
                        System.out.print(ch);
        }

        public static void main(String[] args)
        {

                int n=28;
                System.out.print(n);
                if (n <= 0)
                {
```

```
                    System.out.println("Enter numbers greater than 0");
            }
            else
            {
                    NumberToWords a = new NumberToWords();
                    a.pw((n / 1000000000), " Hundred");
                    a.pw((n / 10000000) % 100, " crore");
                    a.pw(((n / 100000) % 100), " lakh");
                    a.pw(((n / 1000) % 100), " thousand");
                    a.pw(((n / 100) % 10), " hundred");
                    a.pw((n % 100), " ");
            }
        }
    }
```

Program to check the given number is Palindrome or not
```
public class PalindromeNumberCheck
{

        public static void main(String[] args)
        {
                int n=121,pal,r,rev=0;
                pal = n;

                while (n > 0)
                {
                        r = n % 10;
                        rev = rev * 10 + r;
                        n = n / 10;

                }

                if (rev == pal)
                {
                        System.out.println(" The given no is  palindrome "+ rev);
                }
                else
                {
                        System.out.println("The given no is not palindrome " + rev);
                }

        }

}
```

Program to print palindrome number upto N numbers
```
public class PalindromeUptoN
{

        public static void main(String[] args)
        {
                int n, b, rev = 0;
                int limit=50;
```

```
                        System.out.print("Palindrome numbers from 1 to N:");
                        for (int i = 1; i <= limit; i++)
                        {
                                n = i;
                                while (n > 0)
                                {
                                        b = n % 10;
                                        rev = rev * 10 + b;
                                        n = n / 10;
                                }
                                if (rev == i)
                                {
                                        System.out.print(i + " ");
                                }
                                rev = 0;
                        }

                }

}
```

Program to print N prime numbers and find sum and average

```
public class PrimeNumberUptoN
{

        public static void main(String[] args)
        {
                int num =0, i =0;
                System.out.println("Prime numbers from 1 to 100 are :");
           for (i = 1; i <= 100; i++)
           {
            int counter=0;
              for(num =i; num>=1; num--)
             {
                if(i%num==0)
                   {
                counter = counter + 1;
                   }
             }
             if (counter ==2)
              {
                        System.out.print(i+" ");
              }
          }
         }
        }
```

Program to print patterns of numbers and stars

```
*
 * *
 * * *
 * * * *
```

```java
public class PyramidPattern1
{
        public static void main(String[] args)
        {
                int n=4;
                for(int i=0;i<n;i++)
                {
                        System.out.println("\n");
                        for(int j=0;j<=i;j++)
                        {
                                System.out.print(" * ");
                        }
                }

        }

}
```

```
    *
   * *
  * * *
 * * * *
* * * * *
```

```java
public class PyramidPattern2
{
        public static void main(String args[])
    {
       int i, j, k=8;
       for(i=0; i<5; i++)
       {
          for(j=0; j<k; j++)
          {
             System.out.print(" ");
          }
          k = k - 2;
          for(j=0; j<=i; j++)
          {
             System.out.print("* ");
          }
          System.out.println();
       }
    }
}
```

```
***************
******* *******
******  ******
*****   *****
****    ****
```

```
***     ***
**      **
*       *
*       *
**      **
***     ***
****    ****
*****   *****
******  ******
******* *******
***************
```

```java
public class DifferentPatternPrograms1
{
        public static void main(String args[])
        {
                int n,i,j,k,l,m,p,q,r,s;
                Scanner sc=new Scanner(System.in);
                System.out.println("Enter the n values");
                n=sc.nextInt();
                p=n;
                q=n;
                for(i=n;i>=1;i--)
                {
                        for(j=1;j<=i;j++)
                        {
                                System.out.print("*");
                        }
                        for(k=p*2;k<n*2-1;k++)
                        {
                                System.out.print(" ");
                        }
                        for(l=i;l!=0;l--)
                        {
                                if(l==n)
                                {
                                        continue;
                                }
                                System.out.print("*");
                        }
                        p--;
                        System.out.println();
                }
                for(i=1;i<=n;i++)
                {
                        for(j=1;j<=i;j++)
                        {
                                System.out.print("*");
                        }
                        for(k=q*2-2;k>1;k--)
```

```
                    {
                            System.out.print(" ");
                    }
                    for(m=i;m!=0;m--)
                    {
                            if(m==n)
                            {
                                    continue;
                            }
                            System.out.print("*");
                    }
                    System.out.println();
                    q--;
            }
        }
}
```

Print Floyds triangle

```
import java.util.Scanner;

class FloydsTriangle
{
    public static void main(String args[])
    {

        Scanner scan = new Scanner(System.in);
        System.out.println("Enter the number of rows\n");

        int rows = scan.nextInt();
        System.out.println("Floyd's Triangle Generated\n");
        int count = 1;
        for ( int i = 1 ; i <= rows ; i++ )
        {
            for ( int j = 1 ; j <= i ; j++ )
            {
                System.out.print(count+" ");

                count++;
            }

            System.out.println();
        }
    }
}
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
16 17 18 19 20 21
```

Print numbers in sequence way
```
public class PatternNumberSequence
{
        public static void main(String[] args)
        {
                int a = 3;
                int b = 4;
                int n = 8;

                for (int i = 1; i <= n; i++)
                {
                        int c = a + b;
                        System.out.print(a + " " + b + " " + c);
                        System.out.println(" ");
                        a = c;
                        b = b + 1;

                }
        }
}
```
3 4 7
7 5 12
12 6 18
18 7 25
25 8 33
33 9 42
42 10 52
52 11 63
Print numbers in triangle and pyramid vice
1
121
12321
1234321
123454321

```
import java.util.Scanner;
public class PatternNuberPyramidPrevRev
{
        public static void main(String args[])
        {
                int s = 1;
                int n;
                Scanner sc = new Scanner(System.in);
                System.out.println("Enter the N values");
                n = sc.nextInt();
                for (int i = 1; i <= n; i++)
                {
                        while (s <= i)
                        {
                                System.out.print(s);
                                s++;
```

```
                              }
                              s--;
                              while (s > 1)
                              {
                                      System.out.print(--s);

                              }
                              System.out.println();
                      }
              }
      }


1
2 3
4 5 6
7 8 9 10
11 12 13 14 15

public class PatternNumberPyramidUptoN
{

        public static void main(String args[])
        {
                {
                        int i, j, n = 1;
                        for (i = 0; i < 5; i++)
                        {
                                for (j = 0; j <= i; j++)
                                {
                                        System.out.print(n + " ");
                                        n++;
                                }
                                System.out.println();
                        }
                }

        }
}

1
 1 2
 1 2 3
 1 2 3 4
 1 2 3 4 5

import java.util.Scanner;

public class PatternNumberPyramid
{
        public static void main(String args[])
```

```java
    {
            int i, j, n;

            Scanner sc = new Scanner(System.in);
            System.out.println("Enter the Row value  n");
            n = sc.nextInt();
            for (i = 1; i <= n; i++)
            {
                    for (j = 1; j <= i; j++)
                            System.out.print(" " + j);
                    System.out.print("\n");


            }
        }
 }
```

Print numbers in pyramid vice
```java
import java.util.Scanner;
 public class PatternNumberPyramidArrow
{
        public static void main(String args[])
        {
                int i, j, n;
                Scanner sc = new Scanner(System.in);
                System.out.println("Enter the values ");
                n = sc.nextInt();
                for (i = 1; i <= n; i++)
                {
                        for (j = 1; j <= i; j++)
                                System.out.print(" " + j);
                        System.out.print("\n");
                }
                for (i = n - 1; i >= 1; i--)
                {
                        for (j = 1; j <= i; j++)
                                System.out.print(" " + j);
                        System.out.print("\n");
                }
        }
}
```
```
1
 1 2
 1 2 3
 1 2 3 4
 1 2 3 4 5
 1 2 3 4
 1 2 3
 1 2
 1
```

```java
import java.util.Scanner;
public class PatternNumberPyramidRev
{
        public static void main(String args[])
        {
                int i, j, k, n, a;

                Scanner sc = new Scanner(System.in);
                System.out.println("Enter the n values");
                n = sc.nextInt();
                a = n;
                for (i = 1; i <= n; i++)
                {
                        for (j = a; j > 1; j--)
                        {
                                System.out.print(" ");
                        }
                        for (k = i; k != 0; k--)
                        {
                                System.out.print(k);

                        }
                        a--;

                        for (int l = 2; l <= i; l++)
                        {
                                System.out.print(l);

                        }
                        System.out.println();
                }
        }
}
```

```
    1
   212
  32123
 4321234
543212345
```

Print different patterns using stars

```
*****
****
***
**
*
```

```java
import java.util.Scanner;
public class Star1
{
        public static void main(String args[])
        {
```

```java
            int i, j, t;
            System.out.println("How many row you want ");
            Scanner sc = new Scanner(System.in);
            t = sc.nextInt();
            for (j = 0; j < t; j++)
            {
                    for (i = t - 1; i >= j; i--)
                    {
                            System.out.print("*");

                    }
                    System.out.println("");
            }
        }
    }
```

```
*   *
** **
******
```

```java
public class Star3
{
        public static void main(String[] x)
        {
                int i, j, k, n = 3;
                for (i = 0; i < n; i++)
                {
                        for (j = 0; j <= i; j++)
                        {
                                System.out.print("*");
                        }
                        for (j = (n - i); j >= 2; j--)
                        {
                                System.out.print("  ");
                        }
                        for (k = i; k >= 0; k--)
                        {
                                System.out.print("*");
                        }
                        System.out.println();
                }
        }
}
```

```
    *
   ***
  *****
 *******
*********
 *******
  *****
   ***
    *
```

Print pyramid triangle with star and numbers

```java
public class Star10
{

        public static void main(String args[])
        {
                int i, j, k;
                for (i = 1; i <= 5; i++)
                {
                        for (j = i; j < 5; j++)
                        {
                                System.out.print(" ");
                        }
                        for (k = 1; k < (i * 2); k++)
                        {
                                System.out.print("*");
                        }
                        System.out.println("");
                }
                for (i = 4; i >= 1; i--)
                {
                        for (j = 5; j > i; j--)
                        {
                                System.out.print(" ");
                        }
                        for (k = 1; k < (i * 2); k++)
                        {
                                System.out.print("*");
                        }
                        System.out.println("");
                }
        }
}
```

Program to find largest number in an array

```java
   class LargestNumber
  {
        public static void main(String args[])
        {
                int[] a = new int[] { 20, 30, 50, 4, 71, 100};
                int max = a[0];
                for(int i = 1; i < a.length;i++)
                {
                        if(a[i] > max)
                        {
                                max = a[i];
                        }
                }

                System.out.println("The Given Array Element is:");
                for(int i = 0; i < a.length;i++)
```

```
        {
                System.out.println(a[i]);
        }

        System.out.println("From The Array Element Largest Number is:" + max);
        }
    }
```

Program to find second largest number in an array
```java
public class SecondLargest {

        public static void main(String[] args) {

                int arr[] = { 14, 46, 47, 86, 92, 52, 48, 36, 66, 85 };
                int largest = arr[0];
                int secondLargest = arr[0];

                System.out.println("The given array is:" );
                for (int i = 0; i < arr.length; i++) {
                        System.out.print(arr[i]+"\t");
                }
                for (int i = 0; i < arr.length; i++) {

                        if (arr[i] > largest) {
                                secondLargest = largest;
                                largest = arr[i];

                        } else if (arr[i] > secondLargest) {
                                secondLargest = arr[i];

                        }
                }

                System.out.println("\nSecond largest number is:" + secondLargest);

        }
}
```

Find largest and smallest number in an array in java
```java
public class LargestSmallest
{
        public static void main(String[] args)
        {
                int a[] = new int[] { 23, 34, 13, 64, 72, 90, 10, 15, 9, 27 };

                int min = a[0]; //  assume first elements as smallest number
                int max = a[0]; //  assume first elements as largest number

                for (int i = 1; i < a.length; i++)  // iterate for loop from arrays 1st index (second
element)
                {
                        if (a[i] > max)
                        {
```

```java
                                max = a[i];
                        }
                        if (a[i] < min)
                        {
                                min = a[i];
                        }
                }

                System.out.println("Largest Number in a given array is : " + max);
                System.out.println("Smallest Number in a given array is : " + min);
        }

}
```

Program to find largest and second largest in an array

```java
public class LargestAndSecondLargest
{
        public static void main(String[] args)
        {

                int nums[] = { 5, 34, 78, 2, 45, 1, 99, 23 };
                int maxOne = 0;
                int maxTwo = 0;
                for (int i=0;i<nums.length; i++)
                {
                        if (maxOne < nums[i])
                        {
                                maxTwo = maxOne;
                                maxOne = nums[i];
                        }
                        else if (maxTwo < nums[i])
                        {
                                maxTwo = nums[i];
                        }
                }
                System.out.println("Largest Number: " + maxOne);
                System.out.println("Second Largest Number: " + maxTwo);
        }
}
```

Find the index of the largest number in an array

```java
public class LargestNumberIndex
{
        public static void main(String[] args)
        {

                int a[] = new int[] { 12, 44, 23, 56, 23, 78, 13 };

                int max = a[0];
                int index = 0;

                for (int i = 0; i < a.length; i++)
                {
```

```
                              if (max < a[i])
                              {
                                          max = a[i];
                                          index = i;
                              }
                    }

                    System.out.println("Index position of Maximum value in an array is  :  " +
index);
} }
```
Find the index of the smallest number in an array
```
public class SmallestNumberIndex
{
          public static void main(String[] args) {
                    int a[] = new int[]{12,44,23,56,9,23,78,13};

                int min = a[0];
                int index=0;

                for(int i = 0; i < a.length; i++)
                {
                    if(min > a[i])
                    {
                        min = a[i];
                        index=i;
                    }
                }

                System.out.println("Index position of Smallest value in a given array is  :
"+index);
          }

}
```
Program to remove duplicate element in an array
```
public class RemoveDuplicateElements
{
        public static int[] removeDuplicates(int[] input)
        {
                int j = 0;
                int i = 1;
                // return if the array length is less than 2
                if (input.length < 2)
                {
                        return input;
                }
                while (i < input.length)
                {
                        if (input[i] == input[j])
                        {
                            i++;
                        }
```

```java
                else
                {
                        input[++j] = input[i++];
                }
        }
        int[] output = new int[j + 1];
        for (int k = 0; k < output.length; k++)
        {
                output[k] = input[k];
        }
        return output;
}

public static void main(String a[])
{
        int[] input1 = { 2, 3, 6, 6, 8, 9, 10, 10, 10, 12, 12 };
        int[] output = removeDuplicates(input1);

        System.out.print("Input Elements: \n");
        for (int i : input1)
        {
                System.out.print(i + " ");
        }
        System.out.print("\nOutput Elements: \n");
        for (int i : output)
        {
                System.out.print(i + " ");
        }
}
}
```

Program to print odd and even numbers from an array

```java
public class OddEvenArray
{
        public static void main(String args[])
        {
                int s, i;

                int[] a = { 33, 2, 4, 71, 88, 92, 9, 1 };

                for (i = 0; i < a.length; i++)
                {
                        for (int j = i + 1; j < a.length; j++)

                        {
                                if (a[i] > a[j])
                                {
                                        s = a[i];
                                        a[i] = a[j];
                                        a[j] = s;

                                }
```

```java
                }

        }

        System.out.print("Input numbers :");

        for (i = 0; i < a.length; i++)

        {

                System.out.print(" " + a[i]);

        }

        System.out.print("\nOdd numbers :");

        for (i = 0; i <= a.length - 1; i++)
        {

                if (a[i] % 2 != 0)
                {

                        System.out.print(" " + a[i]);
                }

        }

        System.out.print("\nEven numbers :");

        for (i = 0; i < a.length; i++)

        {
                if (a[i] % 2 == 0)
                {

                        System.out.print(" " + a[i]);

                }

        }

    }

}
```

Program to add two matrix

```java
class MatrixAddition
{
        public static void main(String args[])
        {
                int[][] a = new int[][] { { 1, 2, 3},{ 4, 5, 6},{ 7, 8, 9} };
```

```java
		int[][] b = new int[][] { { 10, 11, 12},{ 13, 14, 15},{ 16, 17, 18} };
		int[][] c = new int[3][3];

		if(a.length == b.length && a[0].length == b[0].length)
		{
			for(int i = 0;i < a.length;i++)
			{
				for(int j = 0;j < a[i].length;j++)
				{
					c[i][j] = a[i][j] + b[i][j];
				}
			}
		}
		else
		{
			System.out.println("'A' and 'B' Matrix are not SAME");
			return;
		}

		System.out.println("The Matrix 'A' Value:");
		for(int i = 0;i < a.length;i++)
		{
			for(int j = 0;j < a[i].length;j++)
			{
				System.out.print(a[i][j] + " ");
			}
			System.out.println();
		}

		System.out.println("The Matrix 'B' Value:");
		for(int i = 0;i < a.length;i++)
		{
			for(int j = 0;j < a[i].length;j++)
			{
				System.out.print(b[i][j]+ " ");
		  }
			System.out.println();
		}

	System.out.println("The Addition Matrix of 'A' and 'B' Value:");
		for(int i = 0;i < a.length;i++)
		{
			for(int j = 0;j < a[i].length;j++)
			{
				System.out.print(c[i][j] + " ");
			}
			System.out.println();
		}
	}
}
```

Program to check given matrix is null matrix

```
class NullMatrix
{
        public static void main(String args[])
        {
                int[][] a = new int[][] { { 0, 0, 0},{ 0, 0, 1},{ 0, 0, 0} };
                boolean setValue = true;

                abc: for(int i = 0;i < a.length;i++)
                {
                        for(int j = 0;j < a[i].length;j++)
                        {
                                if(a[i][j] != 0)
                                {
                                        setValue = false;
                                        break abc;
                                }
                        }
                }

                System.out.println("The Given Matrix Value:");
                for(int i = 0;i < a.length;i++)
                {
                        for(int j = 0;j < a[i].length;j++)
                        {
                                System.out.print(a[i][j] + " ");
                        }
                        System.out.println();
                }

                if(setValue == true)
                {
                        System.out.println("The Given Matrix is a Null Matrix");
                }
                else
                {
                        System.out.println("The Given Matrix is not a Null Matrix");
                }
        }
}
```

Program to check given matrix is diagonal matrix

```
class DiagonalMatrix
{
        public static void main(String args[])
        {
                int[][] a = new int[][] { { 1, 0, 1},{ 0, 3, 0},{ 0, 0, 3} };
                boolean setValue = true;
                abc: for(int i = 0;i < a.length;i++)
                {
                        for(int j = 0;j < a[i].length;j++)
                        {
```

```
                                if(i == j)
                                {
                                        if(a[i][j] == 0)
                                        {
                                                setValue = false;
                                                break abc;
                                        }
                                }
                                else if(a[i][j] != 0)
                                {
                                        setValue = false;
                                        break abc;
                                }
                        }
                }

                System.out.println("The Given Matrix Value:");
                for(int i = 0;i < a.length;i++)
                {
                        for(int j = 0;j < a[i].length;j++)
                        {
                                System.out.print(a[i][j] + " ");
                        }
                        System.out.println();
                }

                if(setValue == true)
                {
                        System.out.println("The Given Matrix is a Diagonal Matrix");
                }
                else
                {
                        System.out.println("The Given Matrix is not a Diagonal Matrix");
                }
        }
    }
```

Program for Linear search

```
import java.util.Scanner;

class LinearSearch
{
        public static void main(String args[])
        {
                int i, num, searchval, array[];

                Scanner in = new Scanner(System.in);
                System.out.println("Enter number of elements");
                num = in.nextInt();

                array = new int[num];
                System.out.println("Enter " + num + " integers");
```

```
                for (i = 0; i < num; i++)
                        array[i] = in.nextInt();

                System.out.println("Enter the search value:");
                searchval = in.nextInt();

                in.close();
                for (i = 0; i < num; i++)
                {
                        if (array[i] == searchval)
                        {
                                System.out.println(searchval + " is present at location " + (i + 1));
                                break;
                        }
                }
                if (i == num)
                        System.out.println(searchval + " is not exist in array.");
        }
}
```

Program for Binary Search

```
import java.util.Scanner;
public class BinarySearch
{
        public static void main(String args[])
        {
                int counter, num, item, array[], first, last, middle;
                Scanner input = new Scanner(System.in);
                System.out.println("Enter number of elements:");
                num = input.nextInt();

                array = new int[num];

                System.out.println("Enter " + num + " integers");
                for (counter = 0; counter < num; counter++)
                        array[counter] = input.nextInt();

                System.out.println("Enter the search value:");
                item = input.nextInt();
                first = 0;
                last = num - 1;
                middle = (first + last) / 2;

                while (first <= last)
                {
                        if (array[middle] < item)
                                first = middle + 1;
                        else if (array[middle] == item)
                        {
                        System.out.println(item + " found at location " + (middle + 1) + ".");
                                break;
```

```
                  }
                  else
                  {
                          last = middle - 1;
                  }
                  middle = (first + last) / 2;
            }
            if (first > last)
                  System.out.println(item + " is not found.\n");
      }
}
```

Program to calculate HCF and LCM

```java
public class FindHCFAndLCM
{
      public static void main(String args[])
      {
            int a, b, x, y, t, hcf, lcm;
            x = 6;
            y = 10;
            a = x;
            b = y;
            while (b != 0)
            {
                  t = b;
                  b = a % b;
                  a = t;
            }

            hcf = a;
            lcm = (x * y) / hcf;

            System.out.print("HCF and LCM of : " + x + " and " + y + " is :\n");
            System.out.print("HCF = " + hcf);
            System.out.print("\nLCM = " + lcm);
      }
}
```

Program to find volume of cube

```java
public class Cube {

      public static void main(String arg[]) {
            int side=5;
            float volume=side * side * side;
            System.out.println("Volume of Cube :"+ volume);
      }
}
```

program to print the reverse of a given number

```java
public class ReverseNum
{

      public static void main(String[] args)
      {
```

```
                int rev = 0;
                int num = 1234;
                int no=num;
                while (num > 0)
                {
                        int rem = num % 10;
                        rev = rem + (rev * 10);
                        num = num / 10;


                }

                System.out.println("Number = "+no);
                System.out.println("Reverse = "+rev);
        }
}
```

Program to convert integer to roman letters
```
import java.util.HashMap;
import java.util.Scanner;

public class IntegertoRoman
{
        private static int[] bases = { 1000, 900, 500, 400, 100, 90, 50, 40, 10, 9, 5, 4, 1 };
        private static HashMap<Integer, String> map = new HashMap<Integer, String>();

        private static void setup()
        {
                map.put(1, "I");
                map.put(4, "IV");
                map.put(5, "V");
                map.put(9, "IX");
                map.put(10, "X");
                map.put(40, "XL");
                map.put(50, "L");
                map.put(90, "XC");
                map.put(100, "C");
                map.put(400, "CD");
                map.put(500, "D");
                map.put(900, "CM");
                map.put(1000, "M");
        }

        public String intToRoman(int num)
        {
                setup();
                String result = new String();
                for (int i : bases)
                {
                        while (num >= i)
                        {
```

```
                                    result += map.get(i);
                                    num -= i;
                            }
                    }
                    return result;
            }

            public static void main(String arg[])
            {
                    System.out.println("Enter the number : ");
                    Scanner sc = new Scanner(System.in);
                    int no = sc.nextInt();
                    IntegertoRoman in = new IntegertoRoman();
                    int value=no;
                    String sd = in.intToRoman(value);
                    System.out.println(value+" ---> " + sd);
            }
    }
```

Program to count number of words in given string

```
public class WordCount
{
        public static void main(String args[])
        {
                String s = "welcome to candid java tutorial";

                int count = 1;

                for (int i = 0; i < s.length() - 1; i++)
                {
                        if ((s.charAt(i) == ' ') && (s.charAt(i + 1) != ' '))
                        {
                                count++;

                        }
                }
                System.out.println("Number of words in a string = " + count);
        }
}
```

Program to count number of duplicate words in given string

```
public class CountWords
{

        public static void main(String[] args)
        {
                String input="Welcome to Java Session Session Session";
                String[] words=input.split(" ");
                int wrc=1;

                for(int i=0;i<words.length;i++)
                {
```

```
                    for(int j=i+1;j<words.length;j++)
                    {

                    if(words[i].equals(words[j]))
                        {
                                wrc=wrc+1;
                                words[j]="0";
                        }
                    }
                    if(words[i]!="0")
                    System.out.println(words[i]+"--"+wrc);
                    wrc=1;

        }

    }

}
```

Program to remove duplicate words in given string

```
public class RemoveDuplicate
{

    public static void main(String[] args)
    {
            String input="Welcome to Java Session Java Session Session Java";
            String[] words=input.split(" ");
            for(int i=0;i<words.length;i++)
            {
                    if(words[i]!=null)
                    {

                    for(int j=i+1;j<words.length;j++)
                    {

                    if(words[i].equals(words[j]))
                        {
                                words[j]=null;
                        }
                    }
                    }
            }
            for(int k=0;k<words.length;k++)
            {
                    if(words[k]!=null)
                    {
                            System.out.println(words[k]);
                    }

            }
    }
}
```

Program to count each words and total number of words in given string

```java
import java.io.IOException;

public class FindTtalCountWords
{

    public static void main(String args[]) throws IOException
    {
            countWords("apple banna apple fruit fruit apple hello hi hi hello hi");

    }

    static void countWords(String st)
    {
            String[] words = st.split("\\s");
            int[] fr = new int[words.length];
            for (int i = 0; i < fr.length; i++)
                    fr[i] = 0;
            for (int i = 0; i < words.length; i++)
            {
                    for (int j = 0; j < words.length; j++)
                    {
                            if (words[i].equals(words[j]))
                            {

                                    fr[i]++;

                            }
                    }
            }

            for (int i = 0; i < words.length; i++)
            {
                    for (int j = 0; j < words.length; j++)
                    {
                            if (words[i].equals(words[j]))
                            {
                                    if (i != j)
                                    {
                                            words[i] = "";
                                    }
                            }
                    }
            }

            int total = 0;
            System.out.println("Words and words count:");
            for (int i = 0; i < words.length; i++)
            {
                    if (words[i] != "")
                    {
```

```java
                                System.out.println(words[i] + "=" + fr[i]);

                                total += fr[i];

                        }
                }
                System.out.println("Total words counted: " + total);
        }
}
```

Program to reverse the string and check whether it is palindrome or not

```java
public class PalindromeChecking
{
        public static void main(String[] args)
        {
                String inpstr ="AMMA";
                char[] inpArray = inpstr.toCharArray();
                char[] revArray = new char[inpArray.length];
                int j=0;
                for (int i = inpArray.length - 1; i >= 0; i--)                          {
                        revArray[j]=inpArray[i];
                        j++;
                }
                String revstr=String.valueOf(revArray);
                if(inpstr.equals(revstr))
                {
                        System.out.println("The given string is a Palindrome");
                }
                else
                {
                        System.out.println("The given string is not a Palindrome");
                }

        }
}
```

Program to delete vowels in a given string

```java
public class RemoveAllVovels {

        public static void main(String[] args) {
                String string = "Welcome to Candid Java Programming";
                System.out.println("Input String : "+string);
                string = string.replaceAll("[AaEeIiOoUu]", "");
                System.out.println(string);
        }
}
```

Program to capitalize first letter of each word in string

```java
public class StringCapital
{
        public static void main(String[] args)
        {
                String str = "welcome to candid java program";
                StringBuilder result = new StringBuilder(str.length());
```

```
                String words[] = str.split("\\ ");
                for (int i = 0; i < words.length; i++)
                {

result.append(Character.toUpperCase(words[i].charAt(0))).append(words[i].substring(1)).append
(" ");

                }

                System.out.println(result);


        }

    }
```

Program to split a comma-separated string
```
public class CommaSeparated
{
        public static void main(String[] args)
        {
                String input="Welcome,to,Java Session Session Session";
                String[] words=input.split(",");
                for(int k=0;k<words.length;k++)

                {

                        System.out.println(words[k]);

                }
        }

}
```

Program to convert ASCI value to String
```
public class AsciiToCharacter
{

        public static void main(String[] args)
        {
                char c;
                for(int i=65;i<=90;i++)
                {
                        c =(char)i;
                        System.out.println(i+"  =  "+c);
                }
        }


}
```
Program to replace vowels with star
```
public class VowelswithStar
{
```

```java
        public static void main(String[] args)
        {
                String string = "Welcome to Candid Java Programming"; //Input String
                System.out.println("Input String : "+string);  //Displaying Input String
                string = string.replaceAll("[AaEeIiOoUu]", "*"); //Replace vowels with star
                System.out.println(string);     //Display the word after replacement


        }


}
```

Program to print character position count in a given string

```java
   public class LetterPositionCount
   {

        public static void main(String args[])
        {

                String s = "CANDIDJAVA";
                char[] a = s.toCharArray();
                int i = 1;
                {
                        for (char output : a)
                        {

                                System.out.print(output + " " + i + " ");
                                i++;

                        }
                }

        }
   }
```

Program to print reversed string by word in given line

```java
public class ReverseWord
{

        public static void main(String[] args)
        {
                String input="Welcome to Java Session";
                String[] words=input.split(" ");
                String[] revwords=new String[words.length];
                int j=0;
                for(int i=words.length-1;i>=0;i--)
                {
                        revwords[j]=words[i];
                        System.out.print(revwords[j]+" ");
                        j++;
                }
        }
```

```
    }
```

Program to returning a string as reverse text

```
  public class StringReverse {

  public static void main(String args[])
  {
        String string = "Welcome to Java Programming and Dotnet Programming";
        String[] wordsCount = string.split(" ");

        System.out.println("The Given String is:\n" + string + "\n");
        System.out.println("After Reverse String is:");

        for(int i = wordsCount.length;i > 0;i--)
        {
                System.out.print(wordsCount[i - 1] + " ");
                }
        }
  }
```

Program to find difference of minimum and maximum numbers of array in java

```
import java.util.Scanner;
class MinMaxInArray
{
        int getMax(int[]inputArray)
        {
                int maxValue=inputArray[0];

                for(int i=1;i<inputArray.length;i++)
                {
                        if(inputArray[i]>maxValue)
                        {
                                maxValue=inputArray[i];
                        }
                }
                return maxValue;
        }

        int getMin(int[]inputArray)
        {
                int minValue=inputArray[0];

                for(int i=1;i<inputArray.length;i++)
                {
                        if(inputArray[i]<minValue)
                        {
                                minValue=inputArray[i];
                        }
                }
```

```java
                    return minValue;
        }
}

public class ExArrayDifference
{
        public static void main(String[] args)
        {
                int n;
                Scanner sc = new Scanner(System.in);
                System.out.print("Enter number of elements you wants to enter :" );
                n=sc.nextInt();
                int arr[]=new int[n];
                for(int i=0;i<arr.length;i++)
                {
                        System.out.print("Enter ["+(i+1)+"] element :" );
                        arr[i]=sc.nextInt();
                }

                MinMaxInArray mm=new MinMaxInArray();
                System.out.println("Maximum value is :" +mm.getMax(arr));
                System.out.println("Minimum value is :" +mm.getMin(arr));
                int Difference=mm.getMax(arr)-mm.getMin(arr);
                System.out.print("Difference between Minnimum and Maximum in array is : "
+Difference );
        }
}
```

Program to count the occurrences of each character

```java
class NoOfOccurenceOfCharacters
 {
   static final int MAX_CHAR = 256;
    static void getOccuringChar(String str)
   {
     int count[] = new int[MAX_CHAR];
      int len = str.length();
      for (int i = 0; i < len; i++)
        count[str.charAt(i)]++;
      char ch[] = new char[str.length()];
     for (int i = 0; i < len; i++) {
        ch[i] = str.charAt(i);
        int find = 0;
        for (int j = 0; j <= i; j++) {
           if (str.charAt(i) == ch[j])
              find++;
        }

        if (find == 1)
           System.out.println("Number of Occurrence of " +
```

```java
                str.charAt(i) + " is:" + count[str.charAt(i)]);
        }
    }
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        String str = "geeksforgeeks";
        getOccuringChar(str);
    }
}
```